



Professionalism of dentists who stood through huge earthquake in Japan

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博士論文

Professionalism of dentists
who stood through huge earthquake in Japan

東日本大震災から見えてきた歯科医師のプロフェッショナリズム

杉山 美幸

平成三十年度提出

東北大学

Introduction

It was 14:46, Friday, 11th March, 2011, the largest earthquakes in recorded history hit Japan with a 9.0 moment magnitude scale which centered in the waters off Sanriku, Tohoku area. Tsunami generated by the quake hit several areas including but not limited to the Pacific coast area of Japan. The Japanese government named this disaster as “the Great East Japan Earthquake”. Whole world was changed for the people living in with this incident. Citizen life, property, and mindsets were totally destroyed and lost. According to the report issued by National Police Agency, 7 years after the incident, the number of casualty was 15,895 and Miyagi prefecture accounted for 60% of the total. Elderly people over 65 years old accounted for 56.5% and most of them died by drowning. Number of missing persons was 2,539, and 48% of them died in Miyagi prefecture (62 victims... 2018; Japan... 2018). Number of displaced persons was 75,000 by January 2018, and a huge number of people are still living in temporary houses or far from their home town. Number of deaths related to the quake by physical deconditioning /overfatigue was 3,643 within 6 years and included 89% of elderly over 66 years old. 29% of them are from Miyagi Prefecture (62 victims... 2018; Japan... 2018).

The Miyagi Prefecture Dental Association set the Disaster Countermeasure Office up in that difficult time and took action immediately with members of the association, local government, Miyagi Police Department, and Tohoku University (The great... 2018). Within 9 months from the disaster, 2,829 dentists participated in dental aid, and 1,985 dentists participated with disaster victim identification (DVI), even though the dentists

themselves were also victims of the disaster. (The great... 2018).

In this paper, we discuss humanitarian support, professional achievement and personal feelings or motivation of dentists involved in these activities, and also suggest how we could prepare for such huge disasters as a dentist oral professional with the proper countermeasure or mindset.

Subjects and methods

A survey was done by questionnaire based on inquiries to 1,143 members of the Miyagi Prefecture Dental Association after 3 and half years from the earthquake. The questionnaire was consisted with queries about providing support acts after the quake or general attitudes to assist the local community. The questionnaire was enclosed with the regular notice/ announcement paper from the Association and was collected by mail to Tohoku University anonymously. The applied analysis software was PASW Statistics 18 for Windows (IBM Japan, Tokyo) and the level of significance was $p \leq 0.05$.

Results

The response ratio of the questionnaire was 19.5%. Fifty percent of the responses were collected within Sendai City, the prefectural capital. Eighty one percent of the respondents were male dentists 40s to 60s in age and 59% of them had career over 20 years as a self-employed dentist who owned their private dental office. The status of damage reported by the respondents was the following: 27% of the respondents had more than 10% of patients who suffered damage severely; 67% suffered their own dental office damage; 20% experienced more than 3 months delay to reopen their office.

83% of respondents were involved in supports acts. Details/categories of such acts provided by the dentists after the incident were as the following: DVI (55%), supplying materials (40%), dental aid (23%), oral care (22%), and coordinators (16%). No correlation was found with the damage to their patients and the taken action, though, the results found significant relationship with the damage level of their dental offices (Figure 1A). The participation in DVI was more frequent when the dental office was slightly damaged. Few respondents participated in supplying materials, providing oral care or dental aid if their office was half destroyed. In contrast, more respondents were involved in oral care or dental aid if their office was totally destroyed. (Figure 1B)

A questionnaire was also done about the general attitude toward social activities to grasp the figures of the dentists involved in providing support acts during the quake disaster. No correlation was revealed between general normative consciousness like

having opinion that dentist should do social activities, actual involvement in regular basis, or actual involvement as a resident, and damage status of the patients or damage level of the dental office. However, there was significant correlation with the group who performed material supply, oral care and took action as a coordinator on the earthquake and the groups who highly participated to perform social activities as a dentist (Figure 2A) or as a citizen (Figure 2B) in daily life. Meanwhile, no correlation was found between these attitudes, toward social activities and the chance to participate in DVI. The motivation for providing social support activities after the incident as a dentist was the following: 80% mentioned a sense of responsibility as a physician; 60% answered they acted on humanitarian grounds; 41% answered it was a requirement of the organization; 41% from heartache; 22% for the requirement of the scene; 13% for sympathy with the victims. The motivation factors as a citizen for the acts were as the following: 72% for humanitarian reasons; 70% for heartaches; 47% for sympathy with the victims.

The participation as an examiner of mass dental checkup was thought as one of typical social activities as a dentist in local community. Thus, the frequency of participation as the examiner in such dental checkup was significantly correlated to the participation with providing support acts during the disaster (Figure 3).

The difficulties and the opportunities of dental checkups depended on the target examinee. There were significant correlations between the chance to provide support acts during the quake and to perform dental checkups for preschool children (41% of respondent performed, Figure 4A), for disabled (7.6%, Figure 4B) and treatment by

dentist visits (26%, Figure 4C).

It was also queried whether the respondent felt an expectation from society about social involvement and took action in response. It was asked to find out the reason or motivation for performing dental checkups for preschool children, for disabled, and dentist visits. As a result, respondents who actively performed these activities felt high expectations from residents or local government, and also were highly conscious about contributing to the society. (Figure 5A, 5B)

Discussion

1. Professional consciousness of dentists who experienced the quake disaster

There are a few reports described the actions and role of dentists during the big disaster of earthquakes (Hosokawa *et al.* 2012; Sahelangi and Novita 2012; Trengrove 2011; Wang *et al.* 2009). The dentists in Miyagi prefecture felt, thought, and acted the way of being as “a dentist” during this biggest disaster. The professionalism of these dentists would be represented as the reasons of participation to provide support acts during the quake disaster. 80% of respondents answered the responsibility of a physician and 60% answered humanism actions. These reasons indicated two aspects of professionalism of dentists: as a medical profession and as a care provider, in other words, a healer (Christianson *et al.* 2007; Cruess *et al.* 2002).

Professionalism as a physician is the most important attitude and is mentioned in 12 competencies (Recommendations... 2008). Researches for definition, educational approach and assessment for professionalism education, have been discussed because of a growing consciousness on education for professionalism in the US since the 1990s. In Japan as well, professionalism is initially mentioned as the first factor of 9 fundamental abilities and qualities in the model core curriculum for both medical and dental education issued by the Ministry of Education, Culture, Sports, Science and Technology (Model... 2018; Medical Professionalism Project 2002). Besides, it raised the question if the person who was highly conscious on professionalism did participate during the quake disaster or not. The action taken was split in to five segments as DVI, material supply, dental aid, oral care and coordination. It was also divided to two larger

activity segments. One was DVI for which no correlation was found with the social consciousness of the respondent, and another was providing support acts as healer, consisting of four remaining segments, which was correlated to social consciousness (Cruess *et al.* 2004; Pearson *et al.* 2015).

It was thought that DVI was the action taken as a medical profession with the strongest responsibility. The competencies of professionalism for DVI included respect, responsibly, accountability, excellence, scholarship, honor, integrity and confidentiality (Recommendations... 2008). In contrast, acting as an individual healer came from concerns about humanity based on their own personal responsibilities that motivated them toward providing support acts during the quake disaster. This attitude would include the competencies of caring, compassion, altruism, leadership, and cultural competency which would be more related to the remaining types of support acts (Recommendations... 2008; Cruess *et al.* 2002). Both DVI and supporting acts were selected by those dentists who were highly conscious of the professionalism of a dentist and humanity. It is said from the above that it depends on the factors of each dentist's professionalism what kind of action was taken (Graham 2006).

We performed same survey in 2007, 3 years before the quake. Object and procedure was the same, and the response ratio was 41%. Seventy percent of before-quake questionee and 63% of post-quake gave positive feedback to the question "Do you think dentists should do dental social activities". 43% of before-quake/ 37% of post-quake agreed to "Do you participate social activities as a dentist". Also 30% of before-quake/ 25% of post-quake are positive to "Do you participate social activities as a citizen".

Positive feedback decreased for all above questions. However, the post-quake results showed more than 36% of questionee answered positively “You got stronger opinion that the dentist should do social activities become stronger after the disaster.” It is suggested that dentists became highly conscious about local community commitment through participation to care activities for quake sufferers. The reason of decrease should be the questionee became more realistic to actual social activities through experience of sufferer's care at the quake. From above, consciousness to social commitment or professional identity have been strengthened through quake experience.

2. Professionalism on disaster victim identification (DVI)

Survey results revealed that a large number of dentists participated in DVI regardless of whether their own dental office was damaged or not. However it caused heavy mental stress to the participants. We have feedback like “Never wanted to perform DVI ever” or “Will never join social acts if it will be required to do DVI” on the survey and there were dentists who suffered health deconditioning or insomnia. It was clear that those who joined such activities were encouraged by medical responsibility (Cruess *et al.* 2004).

It has been reported that 88.6% of the bodies were identified from bodily features or personal belongings, 7.9% identified by the shape of the teeth, 2.4% from fingerprint/palm-print and 1.1% from DNA (Aoki and Ito 2014). The number of teeth-identification is 7 times larger than DNA inspection since it was very common that a whole family was lost and swept away with their houses by the tsunami. It was quite

helpful for identification that dental models in dental offices remained during the time since lots of clinical paper records were lost by tsunami or fire after the quake. At the same time, it suggests that we should have prepared for sharing system of medical information among local communities (Aoki and Ito 2014; Kuroda *et al.* 2017; Petju et al. 2007).

These experiences emphasize the importance of a dentist as a conductor of DVI during the disaster (Blank *et al.* 2003; Christianson et al. 2007; Dutta *et al.* 2016). It is also known how important dentists are to find out the cause of death or to provide DVI on crime scenes or accidents as well. The above led to establish “Act for identification of the cause of death” or “Law for inspection for the cause of death or identification of dead body taken custody by the police or other authorities” in 2012, and it is clearly described in regard of “DVI performed by the dentist” in Japan. It is necessary to build curriculum in dental education because body identification is a social requirement. It is also required to strengthen the organization and the development of dental human resources (Aoki and Ito 2014; Kuroda *et al.* 2017; Nathan and Sakthi 2014).

The participate ratio of DVI for all members of the Association was 27% though, it was 55% for the respondents of this survey. Hence, respondents were; 33% of who did DVI/ 11% of who did not. It shows that more highly professionally motivated dentists tend to responded the survey regardless low return ratio, 19.5%. It is small limit the study to understand professionalism since it was almost equal share of participant who did DVI/who did not.

3. Support act provided during the quake disaster and professionalism

Dentists in Miyagi Prefecture provided other types of support acts during the quake disaster. Providing dental rescue at the first stage of the disaster, oral care and material supply afterward. It was not limited to dental physical care. Dentists visited emergency evacuation center or temporary houses for the victims, addressed everyone individually, listened to them with empathy, felt sad with, and acted humanely. It is shown in Figure 1B, the dentists who suffered heaviest damage acted with more enthusiasm even though they had large personal losses. It could be because of sympathy with the victims who lost much (Gil-Rivas and Kilmer 2016). They were enforced by professionalism of dentists and found hope to live and brought strength to stand up (Epstein and Krasner 2013; Luthar *et al.* 2000).

As shown in Figures 4 and 5, a correlation was found between participation of the dentists to provide support acts during the quake disaster and their general attitude toward social activities outside dental office, e.g. mass dental checkups or treatment in dentist visits. Hence, dentists who actively engage in social activities took significant action for the victims for huge disaster like this. From above, it was important to encourage motivation, to participate in social activities as a dentist and to sharpen their techniques and skills. It will lead society with resiliency (Gil-Rivas and Kilmer 2016) from an empowered community taken care by the dentists who provide care or social activities outside of the dental office with deep sympathy and high professionalism (Pearson *et al.* 2015).

4. Society with resilience against disasters

As mentioned above, professional activities by dentists who experienced the quake are divided into two categories. One is the DVI done by members of professional organizations and the other is the support acts for victims provided by each dentist (Dai *et al.* 2009). Since what is important for the DVI is responsibility and well organized teamwork, it could be effective to strengthen communication, establish education, and develop human resources of the dentists (Brown and Williams 2015; Swick *et al.* 1999; Wood 2014). For the other types of support acts provided during the quake disaster, it could be effective to encourage social activities since those dentists who were highly engaged during the disaster also involved in social activities such as dental checkups and dentist visits including for the disabled.

It was 2011, first national measures for dental health, “the Act concerning the promotion of dental and oral health” was in effect. It is stated that it is individual duty for citizens to have dental checkup regularly to keep healthy conditions of themselves. Also it is stated that the government will set up framework for disability person to have regular dental check up or sufficient dental treatments. On the other hand, it is apparent that requirement for dentist visit will increase with high-aging society we are facing. We are in the time to be required to go out from their dental office to the local community as a local dentist. The trends to commit local community will be enhanced by the act and dentists visits will be increased, then it could help them to act as a local dental profession upon huge disaster.

It also strengthens community-based oral care since these acts make dentists more

committed to their local community with motivation for better oral health care. It increases the number of dentists who can act effectively at the time of the disasters. Experience of support act on huge disaster will be helpful to enhance these acts. Who has such experience would take action as a leader or key person and encourage development of local dental health circumstances. It is expected that who experienced the Great East Japan Earthquakes would act such role. Facilitating professionalism of dentists needs deeper communication with other professionals to establish a better healthcare system for community. That would provide the society with power of resiliency against disasters (Luthar *et al.* 2000; Resilience 2011; Wulff *et al.* 2015).

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Figure1. Participation of support acts provided by the dentists had no relation to involvement of their patients to the disaster, but restricted by damage level of their Dental Office. Correlations to participation of support acts were shown with having patient who severely suffered the quake (A) and damage level of their dental office (B).

** : $p < 0.01$ (kai square test); ¥ : $p < 0.05$ (Spearman's rank correlation)

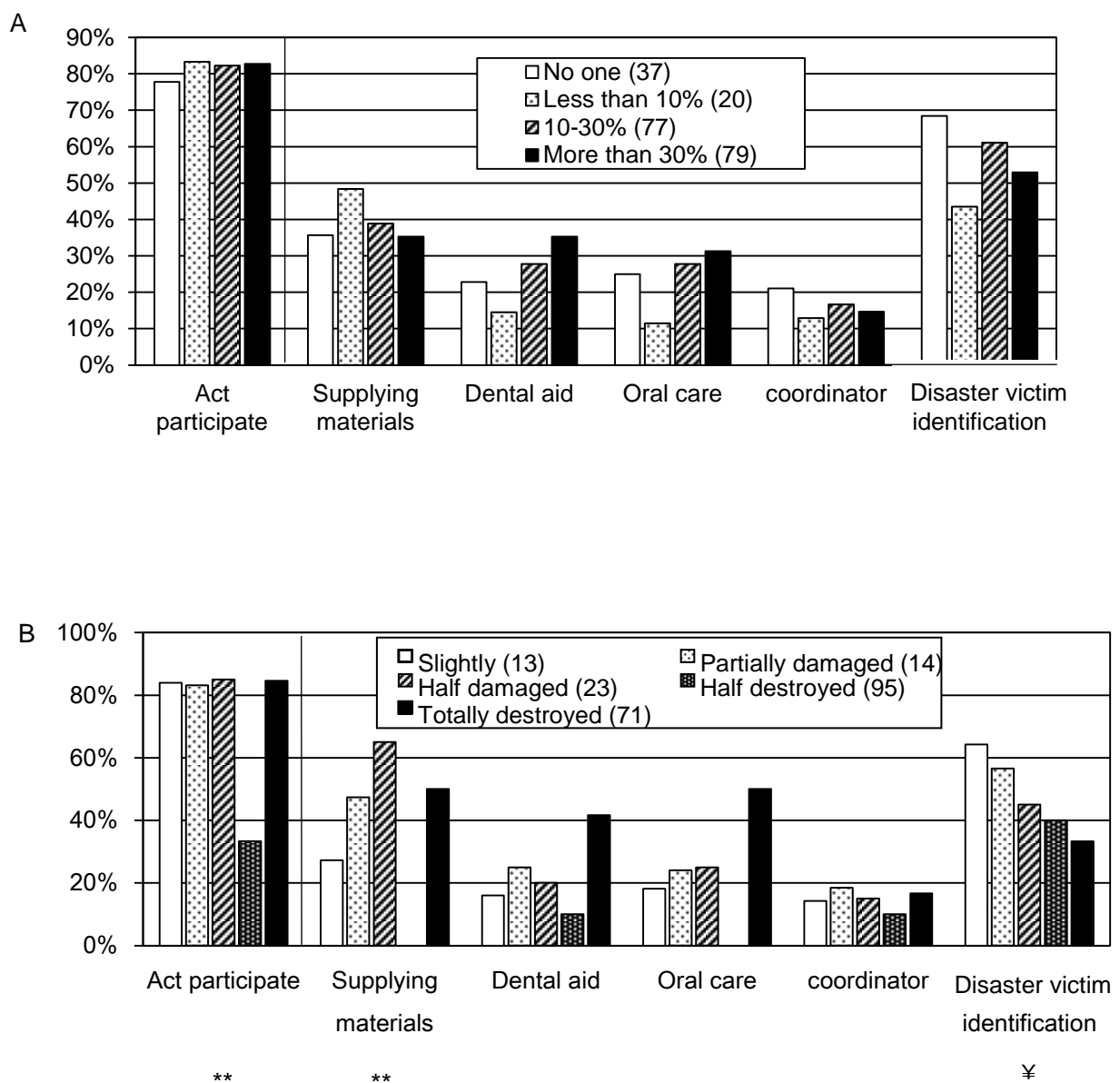


Figure2. Dentists who participated to the support acts had performed more social activities in usual. The questionnaire asked “Do you participate to social activities of dentist in general? “ (A) Or “Do you participate to social activities in general? “ (B). Correlations between participation of support acts and their social activities were shown.

** : $p < 0.01$; * : $p < 0.05$ (Spearman's rank correlation)

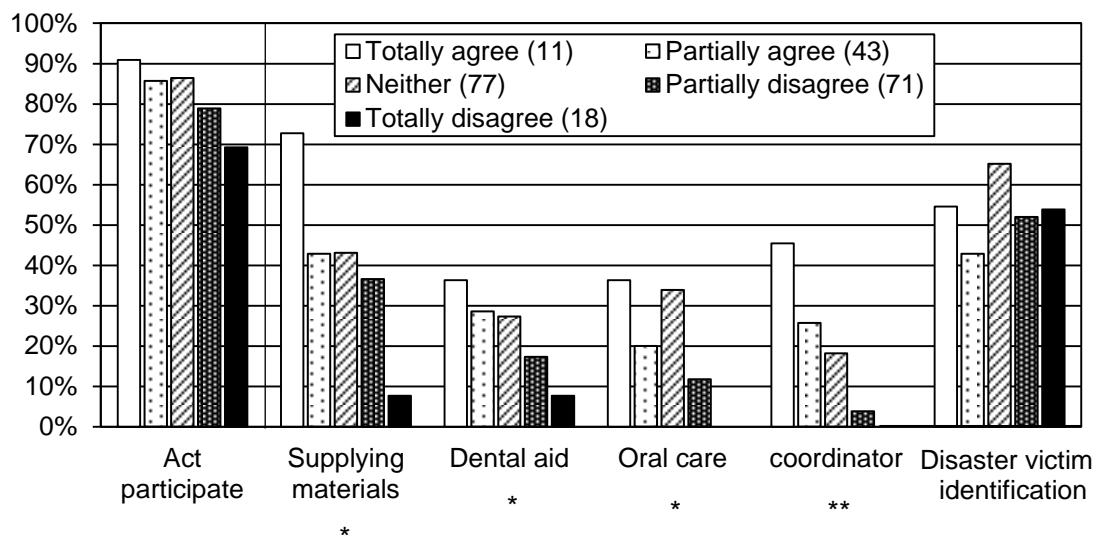
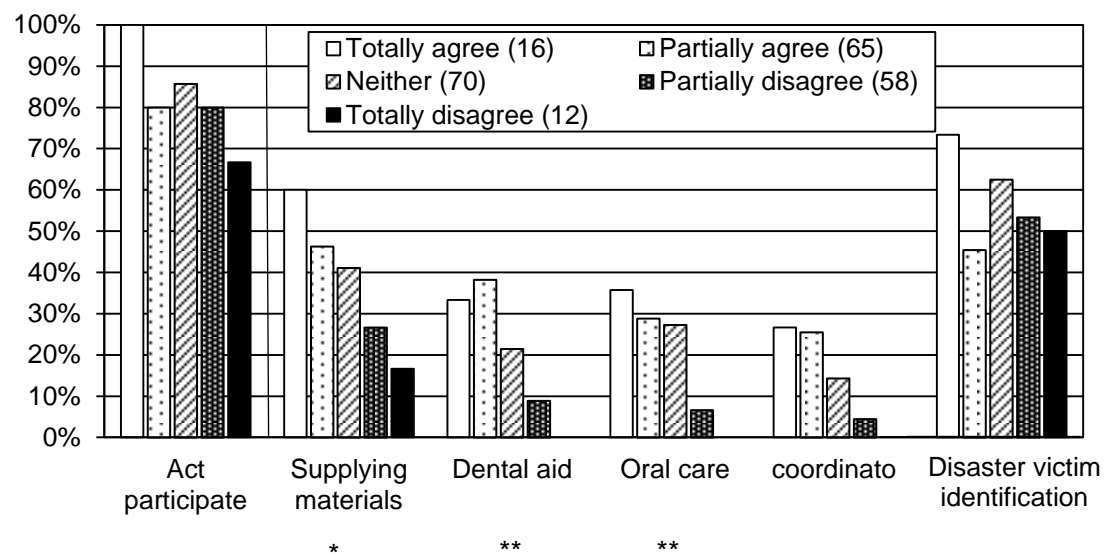


Figure3. Dentist who participated as the examiner to dental checkup in usual performed more support acts in the disaster. Correlation between participation of support acts and frequency of dental check-up were shown.

** : $p < 0.01$; * : $p < 0.05$ (Spearman's rank correlation)

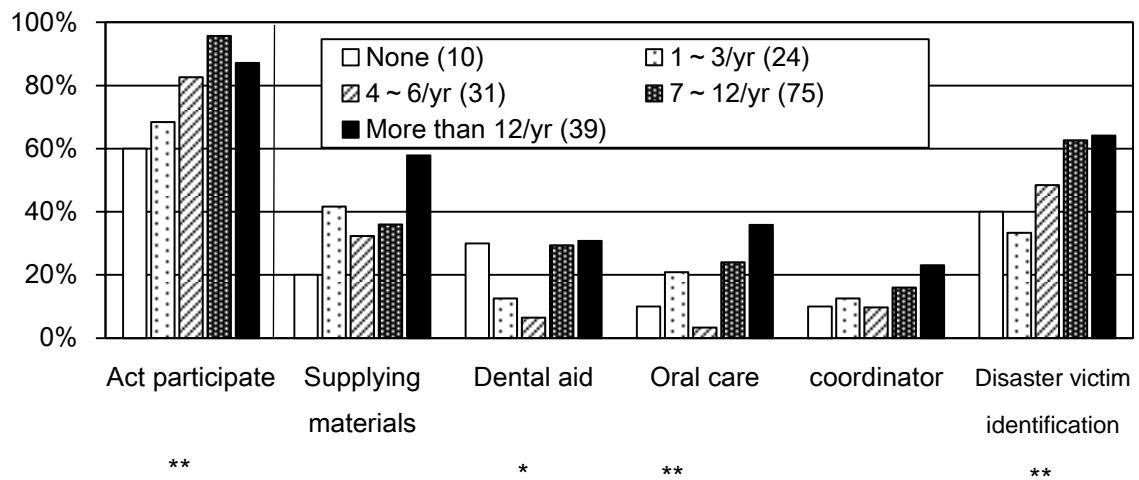


Figure4. Dentist who performed certain kinds of dental checkups and dentist visits participated to more support acts. Correlations between participation of support acts and dental checkups for preschool children (A), for disabled (B), and dentist visits (C) were shown.

** : $p < 0.01$; * : $p < 0.05$ (kai square test)

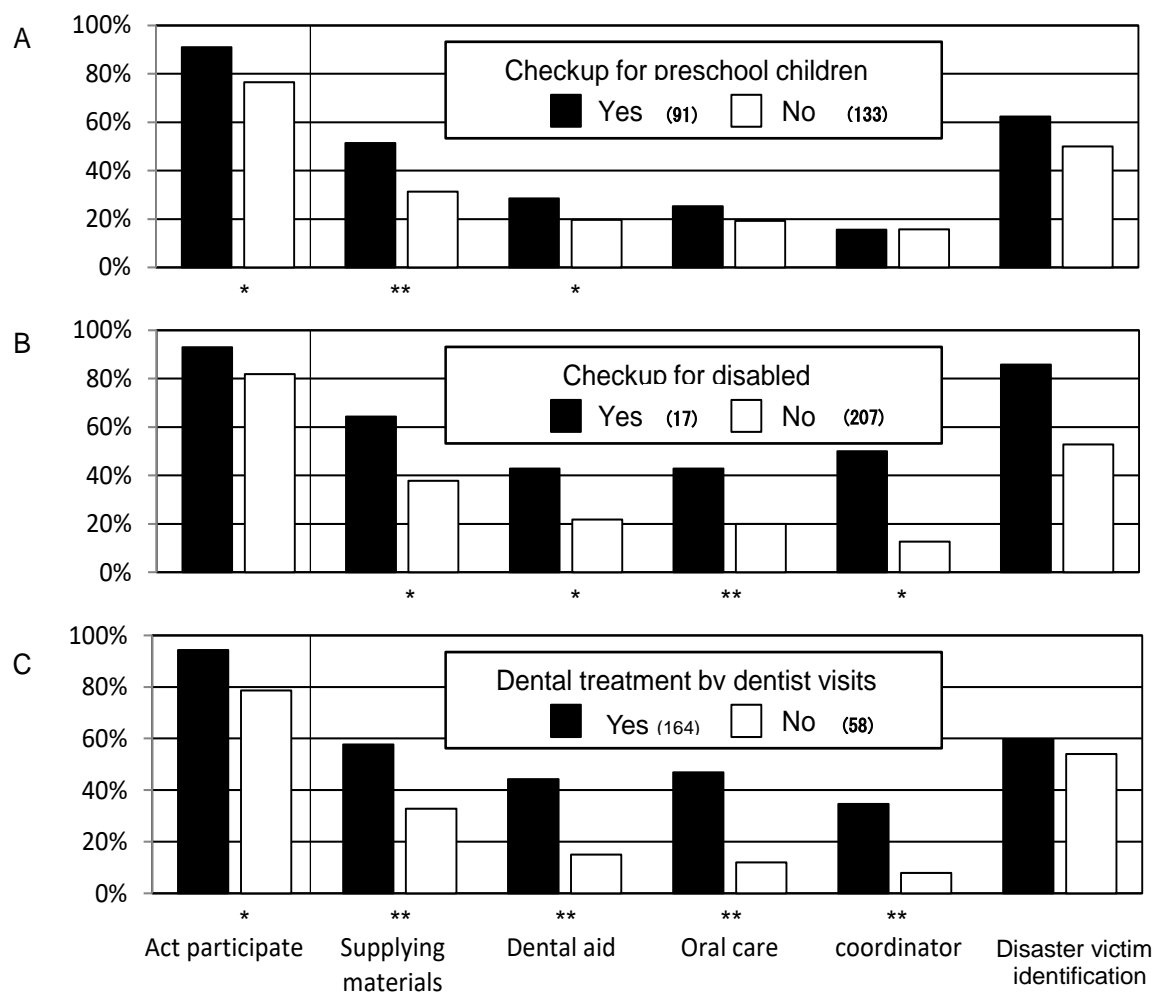
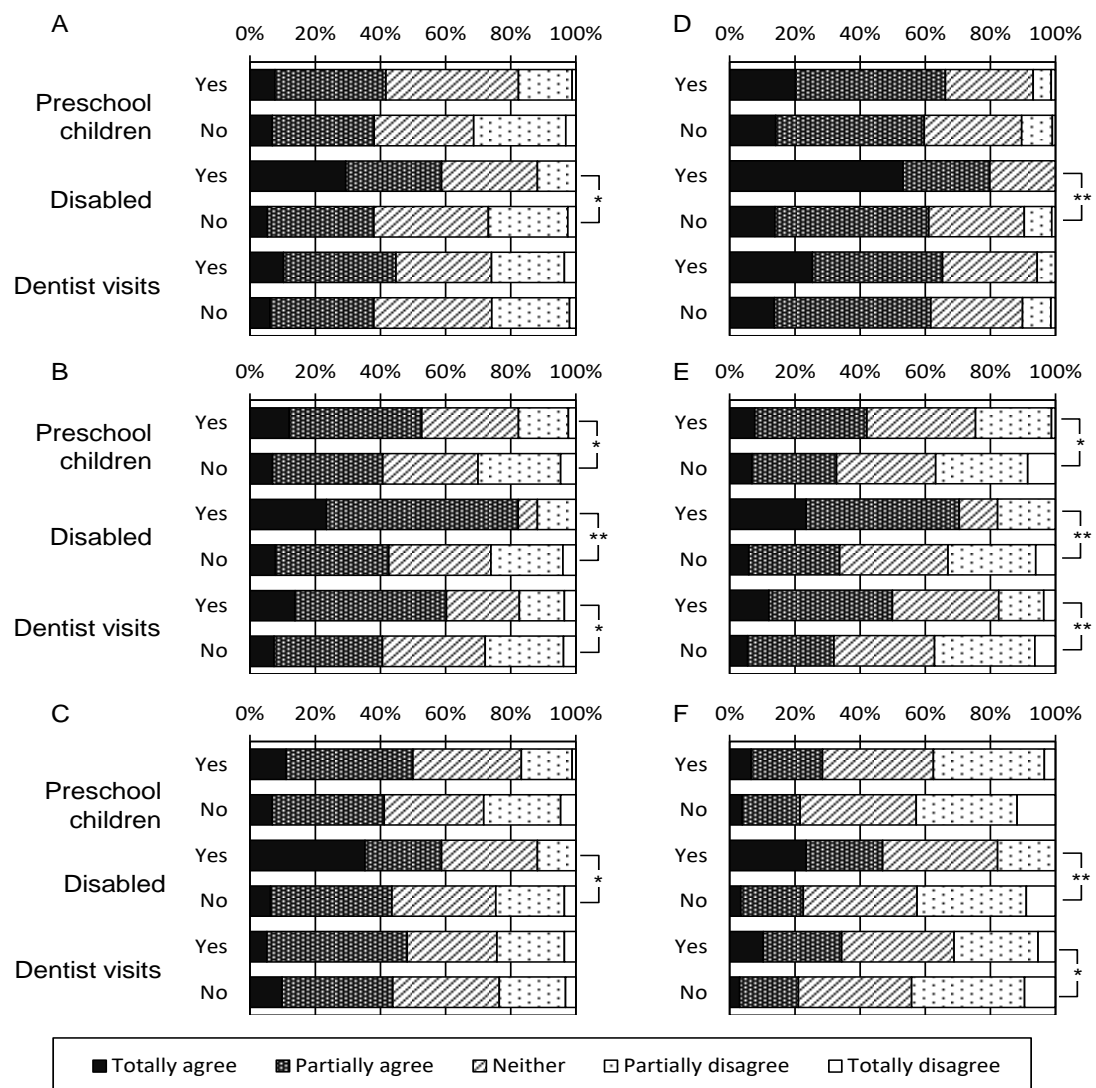


Figure 5. Dentist who performed dental checkups for preschool children or for disabled, or treatment by dentist visits, felt more motivations driven by expectation from local community, and also participated daily social activities. Dentist felt expectation of more professional activities of dentist from residents (A), local government (B), or medical care sector (C). Willing to contribute to the society (D) and participation to local community as a dentist (E) or as a resident (F) were shown.

** $p < 0.01$; * $p < 0.05$ (Spearman's rank correlation)



questionnaire

歯科医師の社会活動の取り組みに関する問票票

ここでの社会活動とは、自らの歯科医院での歯科診療以外の、社会に向けた取り組み（社会貢献）をいいます。あてはまる所に○をつけるか、空いている部分に記入してください。

1. 現在、歯科医師として社会活動を行っていますか。

A. 歯科健診
初めに歯科健診への参加をお聞きます。実施している健診の欄に、概数を記入してください。

検診名	1年間の実施回数（日数）	診療券方式の地域は○を記入して下さい。	合計人数（概数）	集団指導の実施
①1才6ヵ月児歯科健診	回		人	有・無
②2歳6ヶ月児歯科健診	回		人	有・無
③3歳児歯科健診	回		人	有・無
④幼稚園・保育所歯科健診	回		人	有・無
⑤就学時歯科健診	回		人	有・無
⑥学校歯科健診	回		人	有・無
⑦産業歯科健診	回		人	有・無
⑧歯周疾患検診	回		人	有・無
⑨高齢者歯科健診	回		人	有・無
⑩妊産婦歯科検診	回		人	有・無
⑪障害児歯科健診	回		人	有・無
⑫その他の健診 ()	回		人	有・無

次に、歯科健診以外に実施している社会活動がありましたら、概要をお答え下さい。

B. 講習会・学習会の開催

一年に_____回、対象者_____、全部で約_____人
内容_____

C. 歯科保健に関する指導・助言（行政や団体に対して、個人に対する個別指導等を除く）

一年に_____件、対象_____人
内容_____

D. その他

イベントへの参加などの内容

- 1/4 -

2. 東日本大震災時の社会活動をお願いします。

1) 主な患者さんの住居は津波の被害に遭いましたか。
(3割以上 ・ 1割以上 ・ 数名～数十名 ・ 津波の被害はない)

2) 歯科医師の被害はどれくらいでしたか
(全壊 ・ 大規模半壊 ・ 半壊 ・ 一部損壊 ・ 軽微な被害)

3) 避難で自宅を離れましたか。
(避難はない ・ () 日間)

4) 診療再開はいつ頃でしたか。
(3月末まで ・ 5月末まで ・ 6月以降 ・ 再開していない)

5) 震災に関連して、どのような社会活動を行いましたか。行った活動に○、現在も継続している活動に◎を記入してください。

a. 歯科医師として

() 歯科救護（歯科診療） () 日)
() (内容)
() 避難者の口腔ケア支援（誤嚥性肺炎予防） () 日)
() (内容)
() 身元確認 () 日)
() 物品供与 () 回)
() 被災地への連絡・調整役 () 日)
() その他 ()

歯科医師として社会活動を行った方は、その社会的活動は、なぜ行いましたか。当てはまるものに○を記入し、思いの強い順に3つ、①、②、③の番号を付けて下さい。

() 支援せずにいられない思い・心の痛み
() 人道的・道義的使命感
() 医療人としての道義感・使命感
() 現場からの請求
() 組織や周りからの要請
() 同じ被災者として共感
() 自ら被災者としての自立
() その他 ()

b. 個人として

() 物品供与・募金 () 回)
() ボランティア参加（各種） () 日)
() 親戚・知人の支援 () 日)
() その他 ()

個人として社会活動を行った方は、その社会的活動は、なぜ行いましたか。当てはまるものに○を記入し、思いの強い順に3つ、①、②、③の番号を付けて下さい。

() 支援せずにいられない思い・心の痛み
() 人道的・道義的使命感
() 現場からの請求
() 周りからの要請
() 同じ被災者として共感
() 自ら被災者としての自立
() その他 ()

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3. 現在の歯科医師として行っている社会活動に関する意識をお願いします。

1) a. あなたは地域住民から、歯科医師としての社会活動への期待を感じますか。
(とてもそう思う ・ ややそう思う ・ どちらとも思えない ・ あまりそう思わない ・ 全くそう思わない)

b. 震災前後で、地域住民からの社会活動への期待に変化はありますか。
(とても弱くなった ・ やや弱くなった ・ 変わらない ・ やや強くなった ・ とても強くなった)

2) a. あなたは地域の行政から、歯科医師としての社会活動への期待を感じますか。
(とてもそう思う ・ ややそう思う ・ どちらとも思えない ・ あまりそう思わない ・ 全くそう思わない)

b. 震災前後で、地域の行政からの社会活動への期待に変化はありますか。
(とても弱くなった ・ やや弱くなった ・ 変わらない ・ やや強くなった ・ とても強くなった)

3) a. あなたは医療界から、歯科医師としての社会活動への期待を感じますか。
(とてもそう思う ・ ややそう思う ・ どちらとも思えない ・ あまりそう思わない ・ 全くそう思わない)

b. 震災前後で、医療界からの社会活動への期待に変化はありますか。
(とても弱くなった ・ やや弱くなった ・ 変わらない ・ やや強くなった ・ とても強くなった)

4) a. 歯科医師は日常の歯科診療行為以外の社会活動（設問1の項目）を実施すべきだと思いますか。
(とてもそう思う ・ ややそう思う ・ どちらとも思えない ・ あまりそう思わない ・ 全くそう思わない)

b. 震災前後で、社会活動の実施に向かう考えに変化はありますか。
(とても弱くなった ・ やや弱くなった ・ 変わらない ・ やや強くなった ・ とても強くなった)

5) a. あなたは日常の歯科診療行為以外の社会活動（設問1の項目）を意欲的に実施していますか。
(とてもそう思う ・ ややそう思う ・ どちらとも思えない ・ あまりそう思わない ・ 全くそう思わない)

b. 震災前後で、社会活動の実施に変化はありますか。
(とても弱くなった ・ やや弱くなった ・ 変わらない ・ やや強くなった ・ とても強くなった)

6) a. あなたは、歯科以外の分野で、社会活動を意欲的に実施していますか。
(とてもそう思う ・ ややそう思う ・ どちらとも思えない ・ あまりそう思わない ・ 全くそう思わない)

b. 震災前後で、歯科以外の社会活動の実施に変化はありますか。
(とても弱くなった ・ やや弱くなった ・ 変わらない ・ やや強くなった ・ とても強くなった)

4. 歯科医師の診療状況と、あなたの健康状態をお願いします。

a. あなたの毎日の忙しさはどれくらいですか。○を付けて下さい。



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b. 歯科医師の経営状態はどれくらいですか。○を付けて下さい。



c. あなたの健康状態はどれくらいですか。○を付けて下さい。



d. あなたの現在の幸福度はどれくらいですか。○を付けて下さい。



5. これから歯科医師が、より取り組まなければならない社会活動は、何と意思しますか。書き出して、思いの強い順に、①、②、・・・の番号を付けて下さい。思いつかない場合は、無しと記入してください。

6. 東日本大震災を経験した歯科医師として、思うところを自由記載してください。

所属する町の規模 (仙台市 ・ 仙台市以外の市 ・ 町村)

町を特徴づける産業 (商業 ・ 工業 ・ 農業 ・ 水産業 ・ 林業)

歯科医師のスタッフ数（全て常勤として換算した場合）

歯科医師 _____名、歯科衛生士 _____名、歯科助手 _____名、その他 _____名

開業年数 (1～3年 ・ 4～10年 ・ 10～19年 ・ 20年以上)

行っている診療 (一般診療 ・ 在宅診療（往診） ・ 施設等訪問診療)

歯科医師会支部名 _____ 年齢 (_____ 十歳代)

回答者の性別 (男 ・ 女)

ご協力有り難うございました。

回答は添付の封筒で郵送していただくか、FAX (022-717-8332)をお願いします。